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Messrs. Swan Sonnenschein & Co.—"Animal Coloration," by Frank Beddard, Prosector to the Zoological Society, with four colored plates by P. J. Smit, and numerous wood-cuts; "Text-book of Embryology: Man and Mammals," by Dr. Oscar Hertwig, of the University of Berlin, translated and edited from the third German edition by Dr. E. L. Mark, Professor of Anatomy in Harvard University, fully illustrated; "Text-book of Embryology: Invertebrates," by Drs. Korschelt and Heider, of the University of Berlin, translated and edited by Dr. E. L. Mark, Professor of Anatomy in Harvard University, and Dr. W. M. Woodworth, Assistant Professor in Harvard University, fully illustrated; "Text-book of Geology," adapted from the work of Dr. Kayser, Professor in the University of Marburg, by Philip Lake, of St. John's College, Cambridge, fully illustrated; "The Geographical Distribution of Disease in England and Wales," by Alfred Haviland, with several colored maps; "A Treatise on Public Hygiene and its Applications in different European Countries," by Dr. Albert Palmerg, translated, and the English portion edited and revised, by Arthur Newsholme, fully illustrated; "The Photographer's Pocket-book," by Dr. E. Vogel. "Introductory Science Text-Books," additions—introductions to the study of "Zoology," by B. Lindsay, illustrated; "The Amphioxus," by Dr. B. Hatschek, of the University of Vienna, and James Tuckey, of the University of Durham, illustrated; "Geology," by Edward B. Aveling, Fellow of University College, London, illustrated; "Physiological Psychology," by Dr. Th. Ziehen, of the University of Jena, adapted by Dr. Otto Beyer, with twenty-two figures.

Messrs. Crosby Lockwood & Son.—"A Hand-book of Brewing, a Practical Treatise for the use of Brewers and their Pupils," by Herbert Edwards Wright; "A Treatise on Earthy and other Minerals and Mining," by the late D. C. Davies, third edition, revised and very considerably extended by his son, E. H. Davies; "Fuels: Solid, Liquid, and Gaseous, their Analysis and Valuation," for the use of chemists and engineers, by H. J. Phillips, second edition, revised and much enlarged.

LETTERS TO THE EDITOR.

*** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

On request in advance, one hundred copies of the number containing his communication will be furnished free to any correspondent.

The editor will be glad to publish any queries consonant with the character of the journal.

The Bacillus of Influenza.

IN consequence of the inaccuracy of two articles which have recently appeared in *Science* on the subject of the bacillus of influenza, the undersigned considers it necessary to give the following detailed abstract of the preliminary publications which have appeared this year in the *Deutsche Medicinische Wochenschrift* regarding the isolation and cultivation of this organism, and its relation to the disease.

The bacillus of influenza was no doubt observed by Babes in 1890, but he describes a variety of other organisms as occurring in influenza, and his communications [1] [2] show no more evidence than those of other authors of his having proved this or any other organism, to be peculiar to the disease. To the simultaneously published observations of Pfeiffer,[3] Kitasato,[4] and Canon,[5] we must look for definite information on this subject, and to them most certainly is due the credit of discovery.

Where the bacillus of influenza is found. The bacilli are found in large numbers in the sputa and bronchial secretion of those who are suffering from influenza, and also to a greater or less extent in the blood. The bacilli in the sputa have been obtained in pure culture after a new method by Kitasato, and, according to Pfeiffer, their number in sputa bears a direct relation to the progress of the disease, the bacilli disappearing together with the purulent bronchial secretion. Pfeiffer suggests, in view of this fact, that the sputa be regarded as infectious material. This author examined the purulent bronchial secretion of thirty-one cases of influenza, and in all found the bacillus, which will presently be described. In uncomplicated cases of influenza pure cultures of the organism were obtained. He reports six autopsies, in two of which he obtained pure cultures. The bacilli occur in enormous numbers and frequently are observed in the pus cells. The examination of the lungs showed that the bacilli penetrate from the bronchi into the peri-bronchial tissue and may even attain the pleural surface, where, in two of the autopsies the bacilli were obtained in pure cultures from the exsudate on the surface of the pleura. In almost every one of twenty cases examined by Canon the characteristic bacilli were observed to be present in the blood (see further under staining). He usually found four to twenty isolated bacilli in each cover-glass preparation. In six cases where

[1] Babes, V., Vorläufige Mittheilungen ueber einige bei Influenza gefundene Bakterien (Feb. 17-May 3). Centralbl f. Bakteriol., 1890, vol. vii., pp. 233-241, 460-464, 496-502, 533-538, 561-568, 598-606 (with six photographs).

[2] Babes, V., Ueber die bei Influenza gefundene feinen Bakterien (Feb. 11). Deutsche Med. Wochenschr., 1892, No. 6, pp. 113-115.

[3] Pfeiffer, R., Vorläufige Mittheilungen ueber die Erreger der Influenza (Jan. 14). Deutsche Med. Wochenschr., 1892, No. 2, p. 28.

[4] Kitasato, S., Ueber den Influenzabacillus und sein Culturverfahren (Jan. 14). Deutsche Med. Wochenschr., 1892, No. 2, p. 28 (reported to the Society of Charité Physicians, Jan. 7).

[5] Canon, P., Ueber einen Mikroorganismus im Blute von Influenzakranken (Jan. 14). Deutsche Med. Wochenschr, 1892, No. 2, pp. 28-29.

the temperature of the patient had fallen, he found the bacilli in groups of five to fifty. In three of these six cases the temperature of the patient did not rise again after it had fallen, and the bacilli found at the time of the fall of temperature, or shortly after, disappeared after three to six days. The bacilli have not been observed in other conditions, as shown by many control observations made of the sputa in cases of bronchial catarrh, pneumonia, tuberculosis, etc., and they have never been demonstrated in the blood under other circumstances.

Diagnosis of Influenza by the microscopical examination of the blood in obscure cases. Canon[1] has been able to diagnose obscure cases of influenza, especially where no cough or expectoration existed, by means of the microscopical examination of stained blood preparations. The reliability of the microscopical examination was demonstrated in six cases by culture control experiments — the bacilli in the cover-glass preparations being but few and isolated.

Morphology. The bacilli are very minute non-motile rods, one-half as broad as they are long (of the same width as B. murisepticus, about 0.2 μ) and occur in chains of three to four individuals.

Staining. The bacilli are stained by means of dilute Ziehl solution (carbolic acid, five per cent solution in distilled water, 100 cubic centimetres; alcohol, 10 cubic centimetres; fuchsin, 1 gram) or heated Löffler's methylene-blue, and, in consequence of the fact that the ends of the bacilli take up the stain more intensely than the rest of the organism (polar staining), they present the appearance, unless deeply stained (Canon), of diplococci when single, or of streptococci when several bacilli are united to form a chain. The bacilli do not stain well with basic anilins and the Gram method (Pfeiffer). They may be demonstrated in the blood of influenza cases as follows: A drop of blood flowing from the pricked finger tip, is brought in contact with a cover-glass and spread by means of a second cover-glass which is placed over the first. The cover-slips are then drawn apart, and we have two films of blood covering the surface of each, which we proceed to dry at room temperature. Place the cover-glass thus prepared five minutes in absolute alcohol, and from this into Czenzynke's solution (concentr. methylene-blue solution, 40 grams; one-half per cent eosin solution, in 70 per cent alcohol, 20 grams; aq. dest., 40 grams) for three to six hours at 37° C. On removal from the stain, wash with water, dry, and mount in balsam. This stain shows the red blood corpuscles red, the leucocytes and bacilli blue (Canon).

Cultivation of the bacillus of influenza. The bacillus requires 28° to 37° C. for its development. On 1.5 per cent sugar-agar Pfeiffer could not succeed in causing more than a second generation to grow, though minute characteristic colonies at first developed. On glycerine-agar Kitasato has succeeded in maintaining cultures alive up to the tenth generation. The colonies formed by the growth of the influenza bacillus on agar slant-cultures appear like minute watery drops, which are so small that they are easily overlooked. In a second culture, inoculated from the first, the tendency for the colonies to remain separate and distinct is more evident, this growth being regarded as perfectly characteristic. The colonies are observable by means of a hand-lens when 24 hours old.

In bouillon the growth at the end of 24 hours is poor, appearing first in the form of small particles suspended in the perfectly clear fluid. These small bacterial masses gravitate, forming a flocculent deposit and leaving the supernatant fluid clear. This mode of growth, as we know, shows them to be non-motile organisms.

Canon, in his first communication, stated that he had been unable to obtain a growth of the bacilli derived from the blood, either in bouillon, plain agar, sugar or glycerin agar. In his second publication[2] he describes a successful method he has employed for the isolation of the organisms. On account of the diminutive size of the colonies formed by the growth of the bacillus, their comparatively small number in the blood, and the fact that the blood in coagulating prevents a proper isolation of the colonies, Canon proceeded as follows: The use of Esmarch roll cultures was abandoned in favor of cultures on Petri dishes. Into the latter, not only was it possible to introduce a larger amount of blood and thus increase the number of colonies obtained, but also such cultures offered the advantage of being readily examined for the minute colonies of the bacillus by means of the microscope. The blood of influenza patients was obtained in the usual way from the finger-tip, which had been sterilized with sublimate and dried with alcohol and ether, and pricked with a needle or pen-point previously sterilized in the flame. An assistant watches that the blood as it wells forth does not coagulate, but that the drops are spherical in form. Eight to ten drops are smeared over the surface of the dish, and the latter placed at 37° C. The colonies are best seen along the margins of the smeared blood ("Impfstrich"), or in places where relatively little blood has been smeared.

Pathogenic qualities. Monkeys and rabbits are susceptible when inoculated with this organism. Guinea-pigs, rats, pigeons (Pfeiffer), and mice (Pfeiffer, Canon) are refractory.

GEORGE H. F. NUTTALL, M.D., Ph.D. (Göttingen).,
Assistant in Hygiene and Bacteriology.
Johns Hopkins University and Hospital,
Baltimore, Md.

[1] Canon, P., Ueber Züchtung des Influenzabacillus aus dem Blute Influenzakranken (Jan. 21). Deutsche Med. Wochenschr., 1892, No. 3, p. 48.

[2] Canon, P., Ueber Züchtung des Influenzabacillus aus dem Blute Influenzakranken (Jan. 14). Deutsche Med. Wochenschr., 1892, No. 3, p. 48.

The Question of the Celts.

IT would interest me very much, and I believe it would many readers, if Dr. P. Max Foshay will adduce any positive evidence, linguistic, craniological, or artistic, to show, 1, That we have any means of deciding about the language of the Ligurians; 2, That the descendance of the Auvergnats from the Ligurians can be traced; or, 3, That the Euskarian dialects are related to the Ural-Altaic group. According to Dr. Heinrich Winkler, probably the highest living authority on the Ural-Altaic languages, the Euskarian or Basque language has absolutely no relation to any member of the group.

D. G. BRINTON, M.D.

Philadelphia, March 29.

AMONG THE PUBLISHERS.

IN the next number of *The Illustrated American*, No. 111, dated Saturday, April 2, will be commenced a series of illustrated articles by Professor Warren K. Moorehead, on the ancient and extinct race of people known as the Cliff Dwellers, formerly inhabiting that part of the country of the upper Colorado, the San Juan, and its tributaries. This scientific expedition has been sent out under the auspices of *The Illustrated American*. The progress and result of this expedition will be published from time to time in the columns of that excellent weekly.

— F. A. Davis, Philadelphia, has recently issued a book, by Hartvig Nissen, entitled "A B C of the Swedish System of Educational Gymnastics." Mr. Nissen is instructor of physical training in the public schools of Boston, and has been connected in a similar capacity with many of the leading educational institutions of this country and Europe. Since the Swedish system of educational gymnastics has been introduced into the public schools of Boston, it has become a necessity to have a practical hand-book, both for the teachers and the many homes where gymnastics are practised. It is with the purpose of giving plain answers to the most frequent questions that this book has been written.

— With the April number the *Review of Reviews* enters upon its second year. It has had an exceptional, if not an altogether unique, history. One year ago it was known only to a few discriminating readers, and its subscription list and news-stand sales required only a few thousand copies. Its edition the present month is 70,000 copies, and it is eagerly read in every State and Territory in the Union and in every part of Canada. No extraordinary efforts have been made to push the magazine. There has been very little canvassing done for it; no chromos have been given to its subscribers; no special inducements, such as an encyclypædia or a parlor organ thrown in as a gratuity or offered at half-price, have been offered by the publishers. The magazine